



SEQLIST.TXT

SEQUENCE LISTING

<110> Smithkline Beecham Biologicals s.a.  
Bollen, Alex  
Bruck, Claudine  
Jacobs, Paul  
Massaer, Marc

<120> Recombinant Allergen with Reduced Enzymatic Activity

<130> B45122

<140> US 09/554,860

<141> 2000-05-19

<150> PCT/EP98/07521

<151> 1998-11-16

<150> GB9724531.0

<151> 1997-11-19

<160> 31

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 320

<212> PRT

<213> Artificial Sequence

<220>

<223> Recombinant mutant Der p1 including pre-protein -  
Cys 132 to Ala 132

<400> 1

Met	Lys	Ile	Val	Leu	Ala	Ile	Ala	Ser	Leu	Leu	Ala	Leu	Ser	Ala	Val	
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Tyr	Ala	Arg	Pro	Ser	Ser	Ile	Lys	Thr	Phe	Glu	Glu	Tyr	Lys	Lys	Ala	
			20					25					30			
Phe	Asn	Lys	Ser	Tyr	Ala	Thr	Phe	Glu	Asp	Glu	Glu	Ala	Ala	Arg	Lys	
		35					40					45				
Asn	Phe	Leu	Glu	Ser	Val	Lys	Tyr	Val	Gln	Ser	Asn	Gly	Gly	Ala	Ile	
	50					55					60					
Asn	His	Leu	Ser	Asp	Leu	Ser	Leu	Asp	Glu	Phe	Lys	Asn	Arg	Phe	Leu	
65					70				75					80		
Met	Ser	Ala	Glu	Ala	Phe	Glu	His	Leu	Lys	Thr	Gln	Phe	Asp	Leu	Asn	
			85						90					95		
Ala	Glu	Thr	Asn	Ala	Cys	Ser	Ile	Asn	Gly	Asn	Ala	Pro	Ala	Glu	Ile	
			100					105					110			
Asp	Leu	Arg	Gln	Met	Arg	Thr	Val	Thr	Pro	Ile	Arg	Met	Gln	Gly	Gly	
		115					120					125				
Cys	Gly	Ser	Ala	Trp	Ala	Phe	Ser	Gly	Val	Ala	Ala	Thr	Glu	Ser	Ala	
	130					135					140					
Tyr	Leu	Ala	Tyr	Arg	Asn	Gln	Ser	Leu	Asp	Leu	Ala	Glu	Gln	Glu	Leu	
145					150				155					160		
Val	Asp	Cys	Ala	Ser	Gln	His	Gly	Cys	His	Gly	Asp	Thr	Ile	Pro	Arg	
			165					170						175		
Gly	Ile	Glu	Tyr	Ile	Gln	His	Asn	Gly	Val	Val	Gln	Glu	Ser	Tyr	Tyr	
	180							185					190			
Arg	Tyr	Val	Ala	Arg	Glu	Gln	Ser	Cys	Arg	Arg	Pro	Asn	Ala	Gln	Arg	
	195						200					205				
Phe	Gly	Ile	Ser	Asn	Tyr	Cys	Gln	Ile	Tyr	Pro	Pro	Asn	Val	Asn	Lys	
	210					215					220					
Ile	Arg	Glu	Ala	Leu	Ala	Gln	Thr	His	Ser	Ala	Ile	Ala	Val	Ile	Ile	
225					230				235					240		
Gly	Ile	Lys	Asp	Leu	Asp	Ala	Phe	Arg	His	Tyr	Asp	Gly	Arg	Thr	Ile	

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Ile	Gln	Arg	Asp	245	Asn	Gly	Tyr	Gln	Pro	250	Asn	Tyr	His	Ala	Val	255	Asn	Ile
Val	Gly	Tyr	260	Ser	Asn	Ala	Gln	Gly	265	Val	Asp	Tyr	Trp	Ile	270	Val	Arg	Asn
Ser	Trp	Asp	275	Thr	Asn	Trp	Gly	280	Asn	Gly	Tyr	Gly	Tyr	Phe	Ala	Ala		
Asn	Ile	Asp	290	Leu	Met	Met	295	Ile	Glu	Glu	Tyr	Pro	300	Tyr	Val	Val	Ile	Leu
305					310						315						320	

<210> 2  
 <211> 272  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Recombinant mutant Der p1 including pre-protein

Met	Lys	Ile	Val	Leu	Ala	Ile	Ala	Ser	Leu	Leu	Ala	Leu	Ser	Ala	Val			
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Tyr	Ala	Arg	Pro	Ser	Ser	Ile	Lys	Thr	Phe	Glu	Glu	Tyr	Lys	Lys	Ala			
			20					25					30					
Phe	Asn	Lys	Ser	Tyr	Ala	Thr	Phe	Glu	Asp	Glu	Glu	Ala	Ala	Arg	Lys			
		35					40					45						
Asn	Phe	Leu	Glu	Ser	Val	Lys	Tyr	Val	Gln	Ser	Asn	Gly	Gly	Ala	Ile			
	50					55					60							
Asn	His	Leu	Ser	Asp	Leu	Ser	Leu	Asp	Glu	Phe	Lys	Asn	Arg	Phe	Leu			
65					70				75					80				
Met	Ser	Ala	Glu	Ala	Phe	Glu	His	Leu	Lys	Thr	Gln	Phe	Asp	Leu	Asn			
				85					90					95				
Ala	Cys	Ser	Ile	Asn	Gly	Asn	Ala	Pro	Ala	Glu	Ile	Asp	Leu	Arg	Gln			
			100					105					110					
Met	Arg	Thr	Val	Thr	Pro	Ile	Arg	Met	Gln	Gly	Gly	Cys	Gly	Ser	Cys			
		115					120					125						
Trp	Ala	Phe	Ser	Gly	Val	Ala	Ala	Thr	Glu	Ser	Ala	Tyr	Leu	Ala	Tyr			
	130					135					140							
Arg	Asn	Gln	Ser	Leu	Asp	Leu	Ala	Glu	Gln	Glu	Leu	Val	Asp	Cys	Ala			
145					150					155				160				
Ser	Gln	His	Gly	Cys	His	Gly	Asp	Thr	Ile	Pro	Arg	Gly	Ile	Glu	Tyr			
			165					170						175				
Ile	Gln	His	Asn	Gly	Val	Val	Gln	Glu	Ser	Tyr	Tyr	Arg	Tyr	Val	Ala			
		180						185					190					
Arg	Glu	Gln	Ser	Cys	Arg	Arg	Pro	Asn	Ala	Gln	Arg	Phe	Gly	Ile	Ser			
	195						200					205						
Asn	Tyr	Cys	Gln	Ile	Tyr	Pro	Pro	Asn	Val	Asn	Lys	Ile	Arg	Glu	Ala			
	210					215					220							
Leu	Ala	Gln	Thr	His	Ser	Ala	Ile	Ala	Val	Ile	Ile	Gly	Ile	Lys	Asp			
225					230					235				240				
Leu	Asp	Ala	Phe	Arg	His	Tyr	Asp	Gly	Arg	Thr	Ile	Ile	Gln	Arg	Asp			
			245					250					255					
Asn	Gly	Tyr	Gln	Pro	Asn	Tyr	His	Ala	Val	Asn	Ile	Val	Gly	Tyr	Ser			
			260					265					270					

<210> 3  
 <211> 320  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Recombinant mutant Der p1 including pre-protein -  
 His 268 to Ala 268

Met	Lys	Ile	Val	Leu	Ala	Ile	Ala	Ser	Leu	Leu	Ala	Leu	Ser	Ala	Val			
1				5					10					15				

SEQLIST.TXT

Tyr Ala Arg Pro Ser Ser Ile Lys Thr Phe Glu Glu Tyr Lys Lys Ala  
 20 25 30  
 Phe Asn Lys Ser Tyr Ala Thr Phe Glu Asp Glu Glu Ala Ala Arg Lys  
 35 40 45  
 Asn Phe Leu Glu Ser Val Lys Tyr Val Gln Ser Asn Gly Gly Ala Ile  
 50 55 60  
 Asn His Leu Ser Asp Leu Ser Leu Asp Glu Phe Lys Asn Arg Phe Leu  
 65 70 75 80  
 Met Ser Ala Glu Ala Phe Glu His Leu Lys Thr Gln Phe Asp Leu Asn  
 85 90 95  
 Ala Glu Thr Asn Ala Cys Ser Ile Asn Gly Asn Ala Pro Ala Glu Ile  
 100 105 110  
 Asp Leu Arg Gln Met Arg Thr Val Thr Pro Ile Arg Met Gln Gly Gly  
 115 120 125  
 Cys Gly Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala  
 130 135 140  
 Tyr Leu Ala Tyr Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu  
 145 150 155 160  
 Val Asp Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Arg  
 165 170 175  
 Gly Ile Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr  
 180 185 190  
 Arg Tyr Val Ala Arg Glu Gln Ser Cys Arg Arg Pro Asn Ala Gln Arg  
 195 200 205  
 Phe Gly Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys  
 210 215 220  
 Ile Arg Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile  
 225 230 235 240  
 Gly Ile Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Arg Thr Ile  
 245 250 255  
 Ile Gln Arg Asp Asn Gly Tyr Gln Pro Asn Tyr Ala Ala Val Asn Ile  
 260 265 270  
 Val Gly Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn  
 275 280 285  
 Ser Trp Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala  
 290 295 300  
 Asn Ile Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu  
 305 310 315 320

<210> 4  
 <211> 339  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> Recombinant mutant Der p1 encoded by pNIV4842

<400> 4  
 Met Leu Leu Val Asn Gln Ser His Gln Gly Phe Asn Lys Glu His Thr  
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 Ser Lys Met Val Ser Ala Ile Val Leu Tyr Val Leu Leu Ala Ala Ala  
 20 25 30  
 Ala His Ser Ala Phe Ala Ala Asp Pro Arg Pro Ser Ser Ile Lys Thr  
 35 40 45  
 Phe Glu Glu Tyr Lys Lys Ala Phe Asn Lys Ser Tyr Ala Thr Phe Glu  
 50 55 60  
 Asp Glu Glu Ala Ala Arg Lys Asn Phe Leu Glu Ser Val Lys Tyr Val  
 65 70 75 80  
 Gln Ser Asn Gly Gly Ala Ile Asn His Leu Ser Asp Leu Ser Leu Asp  
 85 90 95  
 Glu Phe Lys Asn Arg Phe Leu Met Ser Ala Glu Ala Phe Glu His Leu  
 100 105 110  
 Lys Thr Gln Phe Asp Leu Asn Ala Cys Ser Ile Asn Gly Asn Ala Pro  
 115 120 125  
 Ala Glu Ile Asp Leu Arg Gln Met Arg Thr Val Thr Pro Ile Arg Met  
 130 135 140  
 Gln Gly Gly Cys Gly Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr

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145      150      155      160
Glu Ser Ala Tyr Leu Ala Tyr Arg Asn Gln Ser Leu Asp Leu Ala Glu
165      170      175
Gln Glu Leu Val Asp Cys Ala Ser Gln His Gly Cys His Gly Asp Thr
180      185      190
Ile Pro Arg Gly Ile Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu
195      200      205
Ser Tyr Tyr Arg Tyr Val Ala Arg Glu Gln Ser Cys Arg Arg Pro Asn
210      215      220
Ala Gln Arg Phe Gly Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn
225      230      235      240
Ala Asn Lys Ile Arg Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala
245      250      255
Val Ile Ile Gly Ile Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly
260      265      270
Arg Thr Ile Ile Gln Arg Asp Asn Gly Tyr Gln Pro Asn Tyr His Ala
275      280      285
Val Asn Ile Val Gly Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile
290      295      300
Val Arg Asn Ser Trp Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr
305      310      315      320
Phe Ala Ala Asn Ile Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val
325      330      335
Val Ile Leu

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<210> 5  
 <211> 343  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Recombinant mutant Der p1 encoded by pNIV4843

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20      25      30
Ala His Ser Ala Phe Ala Ala Asp Pro Arg Pro Ser Ser Ile Lys Thr
35      40      45
Phe Glu Glu Tyr Lys Lys Ala Phe Asn Lys Ser Tyr Ala Thr Phe Glu
50      55      60
Asp Glu Glu Ala Ala Arg Lys Asn Phe Leu Glu Ser Val Lys Tyr Val
65      70      75      80
Gln Ser Asn Gly Gly Ala Ile Asn His Leu Ser Asp Leu Ser Leu Asp
85      90      95
Glu Phe Lys Asn Arg Phe Leu Met Ser Ala Glu Ala Phe Glu His Leu
100      105      110
Lys Thr Gln Phe Asp Leu Asn Ala Glu Thr Asn Ala Cys Ser Ile Asn
115      120      125
Gly Asn Ala Pro Ala Glu Ile Asp Leu Arg Gln Met Arg Thr Val Thr
130      135      140
Pro Ile Arg Met Gln Gly Gly Cys Gly Ser Ala Trp Ala Phe Ser Gly
145      150      155      160
Val Ala Ala Thr Glu Ser Ala Tyr Leu Ala Tyr Arg Asn Gln Ser Leu
165      170      175
Asp Leu Ala Glu Gln Glu Leu Val Asp Cys Ala Ser Gln His Gly Cys
180      185      190
His Gly Asp Thr Ile Pro Arg Gly Ile Glu Tyr Ile Gln His Asn Gly
195      200      205
Val Val Gln Glu Ser Tyr Tyr Arg Tyr Val Ala Arg Glu Gln Ser Cys
210      215      220
Arg Arg Pro Asn Ala Gln Arg Phe Gly Ile Ser Asn Tyr Cys Gln Ile
225      230      235      240
Tyr Pro Pro Asn Ala Asn Lys Ile Arg Glu Ala Leu Ala Gln Thr His
245      250      255

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Ser Ala Ile Ala Val Ile Ile Gly Ile Lys Asp Leu Asp Ala Phe Arg  
 260 265 270  
 His Tyr Asp Gly Arg Thr Ile Ile Gln Arg Asp Asn Gly Tyr Gln Pro  
 275 280 285  
 Asn Tyr His Ala Val Asn Ile Val Gly Tyr Ser Asn Ala Gln Gly Val  
 290 295 300  
 Asp Tyr Trp Ile Val Arg Asn Ser Trp Asp Thr Asn Trp Gly Asp Asn  
 305 310 315 320  
 Gly Tyr Gly Tyr Phe Ala Ala Asn Ile Asp Leu Met Met Ile Glu Glu  
 325 330 335  
 Tyr Pro Tyr Val Val Ile Leu  
 340

<210> 6  
 <211> 963  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Nucleotide sequence encoding recombinant mutant  
 Der p1 - Cys 132 to Ala 132

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 tcatcgaatc aaacttttga agaatacaaa aaagccttca acaaaaagtta tgctaccttc 120  
 gaagatgaag aagctgcccg taaaaacttt ttggaatcag taaaatatgt tcaatcaaatt 180  
 ggaggtgcca tcaaccattt gtccgatttg tcgttggatg aattcaaaaa ccgatttttg 240  
 atgagtgcag aagcttttga acacctcaaa actcaattcg atttgaatgc tgaaactaac 300  
 gcctgcagta tcaatggaaa tgctccagct gaaatcgatt tgcgacaaat gcgaactgtc 360  
 actcccatc gtatgcaagg aggcgtgtgt tcagcttggg ctttctctgg tgttgccgca 420  
 actgaatcag cttatttggc ttaccgtaat caatcattgg atcttgctga acaagaatta 480  
 gtcgattgtg cttcccaaca cggttgtcat ggtgatacca ttccacgtgg tattgaatac 540  
 atccaacata atggtgtcgt ccaagaaagc tactatcgat acggtgcacg agaacaatca 600  
 tgccgacgac caaatgcaca acgtttcggg atctcaaaact attgccaaat ttaccacaca 660  
 aatgtaaaaca aaattcgtga agctttggct caaacccaca gcgctattgc cgtcattatt 720  
 ggcatacaaa attttagacgc attccgtcat tatgattggc gaacaatcat tcaacgcgat 780  
 aatggttacc aaccaaacta tcacgctgtc aacattgttg gttacagtaa cgcacaaggt 840  
 gtcgattatt ggatcgtacg aaacagttgg gataccaatt ggggtgataa tgggttacgg 900  
 tattttgctg ccaacatcga tttgatgatg attgaagaat atccatatgt tgtcattctc 960  
 taa 963

<210> 7  
 <211> 951  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Nucleotide sequence encoding recombinant mutant  
 Der p1 - NAET deletion

<400> 7  
 atgaaaattg ttttggccat cgcctcattg ttggcattga gcgctgttta tgctcgtcca 60  
 tcatcgaatc aaacttttga agaatacaaa aaagccttca acaaaaagtta tgctaccttc 120  
 gaagatgaag aagctgcccg taaaaacttt ttggaatcag taaaatatgt tcaatcaaatt 180  
 ggaggtgcca tcaaccattt gtccgatttg tcgttggatg aattcaaaaa ccgatttttg 240  
 atgagtgcag aagcttttga acacctcaaa actcaattcg atttgaacgc ctgcagtatc 300  
 aatggaaaatg ctccagctga aatcgatttg cgacaaatgc gaactgtcac tcccattcgt 360  
 atgcaaggag gctgtggttc atgttgggct ttctctgggt ttgccgcaac tgaatcagct 420  
 tatttggcct accgtaatca atcattggat cttgctgaac aagaattagt cgatttgtgt 480  
 tccaacacg gttgtcatgg tgataccatt ccacgtggta ttgaatacat ccaacataat 540  
 ggtgtcgtcc aagaaagcta ctatcgatac gttgcacgag aacaatcatg ccgacgacca 600  
 aatgcacaac gtttcgggat ctcaaactat tgccaaattt accccacaaa tgtaaacaaa 660  
 attcgtgaag ctttggctca aaccacacgc gctattggcc tcattatttg catcaaagat 720  
 ttagacgcat tccgtcatta tgatggccga acaatcattc aacgcgataa tgggttacaa 780  
 ccaaaactatc acgctgtcaa cattgttggg tacagtaacg cacaagggtg cgattattgg 840  
 atcgtacgaa acagttggga taccaattgg ggtgataatg gttacgggta ttttgcgtgc 900  
 aacatcgatt tgatgatgat tgaagaatat ccatatgttg tcattctcta a 951

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<210> 8  
 <211> 963  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Nucleotide sequence encoding recombinant mutant  
 Der p1 - His 268 to Ala 268

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 tcatcgatca aaacttttga agaatacaaa aaagccttca acaaaaagtta tgctaccttc 120  
 gaagatgaag aagctgcccg taaaaacttt ttggaatcag taaaatatgt tcaatcaaatt 180  
 ggaggtgcca tcaaccattt gtccgatttg tcgttggatg aattcaaaaa ccgatttttg 240  
 atgagtgacg aagcttttga acacctcaaa actcaattcg atttgaatgc tgaaactaac 300  
 gcctgcagta tcaatggaaa tgctccagct gaaatcgatt tgcgacaaat gcgaactgtc 360  
 actcccattc gtatgcaagg aggcgtgtgg tcatgttggg ctttctctgg tgttgccgca 420  
 actgaatcag cttatttggc ttaccgtaat caatcattgg atcttgctga acaagaatta 480  
 gtcgattgtg cttcccaaca cggttgtcat ggtgatacca ttccacgtgg tattgaatac 540  
 atccaacata atggtgtcgt ccaagaaagc tactatcgat acgttgacag agaacaatca 600  
 tgccgacgac caaatgcaca acgtttcggt atctcaaact attgccaaat ttaccacca 660  
 aatgtaaaaca aaattcgtga agctttggct caaaccaca gcgctattgc cgtcattatt 720  
 ggcatacaag atttagacgc attccgcat tatgatggcc gaacaatcat tcaacgcgat 780  
 aatggttacc aaccaaacta tgctgctgtc aacattgttg gttacagtaa cgcacaagg 840  
 gtcgattatt ggatcgtacg aaacagttgg gataccaatt ggggtgataa tgggttacgg 900  
 tattttgctg ccaacatcga ttgatgatg attgaagaat atccatatgt tgtcattctc 960  
 taa 963

<210> 9  
 <211> 36  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> XhoI-PstI oligonucleotide

<400> 9  
 tcgagaaaag agaggctgaa gctactaacg cctgca 36

<210> 10  
 <211> 28  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> XhoI-PstI oligonucleotide

<400> 10  
 ggcgttagta gcttcagcct ctcttttc 28

<210> 11  
 <211> 86  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> BamHI-PstI oligonucleotide

<400> 11  
 gatccaaacg atgagatttc cttcaatttt tactgcagtt ttattcgcag catcctccgc 60  
 attagctgct ccaactaacg cctgca 86

<210> 12  
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 <213> Artificial Sequence

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<220>
<223> BamHI-PstI oligonucleotide

<400> 12
ggcgttagtt ggagcagcta atgcggagga tgctgcgaat aaaactgcag taaaaattga 60
aggaaatctc atcgtttg 78

<210> 13
<211> 74
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide allowing the NAET deletion

<400> 13
aattcaaaaa ccgatttttg atgagtgcag aagcttttga acacctaaaa ctcaattcga 60
tttgaacgcc tgca 78

<210> 14
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide allowing the NAET deletion

<400> 14
ggcgttcaaa tcgaattgag ttttgaggtg ttcaaaagct tctgcatcat caaaaatcgg 60
tttttg 66

<210> 15
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> RT-PCR primer

<400> 15
catgaaaatt gttttggcca tcgcc 25

<210> 16
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> RT-PCR primer

<400> 16
cggtttttga attcatccaa cgac 24

<210> 17
<211> 113
<212> DNA
<213> Artificial Sequence

<220>
<223> AseI-TfiI synthetic fragment

<400> 17
taatggaaat gctccagctg aaatcgattt gcgacaaatg cgaactgtca ctcccattcg 60
tatgcaagga ggctgtggtt cagcttgggc tttctctggt gttgccgcaa ctg 113

<210> 18
<211> 114
<212> DNA

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<213> Artificial Sequence

<220>

<223> AseI-TfiI synthetic fragment

<400> 18

attcagttgc ggcaacacca gagaaagccc aagctgaacc acagcctcct tgcatacgaa 60  
tgggagtgac agttcgcatt tgtcgcaa at cgatttcagc tggagcattt ccat 114

<210> 19

<211> 75

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide allowing the NAET deletion

<400> 19

aattcaaaaa ccgatttttg atgagtgacag aagcttttga acacctcaaa actcaattcg 60  
atttgaacgc ctgca 75

<210> 20

<211> 67

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide allowing the NAET deletion

<400> 20

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gtttttg 67

<210> 21

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> RT-PCR primer

<400> 21

catgaaaatt gttttggcca tcgcc 25

<210> 22

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> RT-PCR primer

<400> 22

cggtttttga attcatccaa cgac 24

<210> 23

<211> 78

<212> DNA

<213> Artificial Sequence

<220>

<223> HindIII-PstI oligonucleotide

<400> 23

agcttaccat gaaaattggt ttggccatcg cctcattggt ggcattgagc gctgtttatg 60  
ctcgtactaa cgcttgca 78

<210> 24



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<211> 70
<212> DNA
<213> Artificial Sequence

<220>
<223> HindIII-PstI oligonucleotide

<400> 24
ggcgttagta cgagcataaa cagcgtcaa tgccaacaat gaggcgatgg ccaaaacaat 60
tttcatgta                                     70

<210> 25
<211> 172
<212> DNA
<213> Artificial Sequence

<220>
<223> BamHI-EcoRI 172 bp synthetic fragment

<400> 25
gatccccggc cgtcatcgat caaaactttt gaagaatata aaaaagcctt caacaaaagt 60
tatgctacct tcgaagatga agaagctgcc cgtaaaaact ttttggaatc agtaaaatat 120
gttcaatcaa atggagggtgc catcaaccat ttgtccgatt tgtcgttgga tg          172

<210> 26
<211> 172
<212> DNA
<213> Artificial Sequence

<220>
<223> BamHI-EcoRI 172 bp synthetic fragment
        complementary sequence

<400> 26
aattcatcca acgacaaatc ggacaaatgg ttgatggcac ctccatttga ttgaacatat 60
tttactgatt ccaaaaagtt tttacgggca gcttcttcat cttcgaagg agcataactt 120
ttgttgaagg cttttttgta ttcttcaaaa gttttgatcg atgacggccg gg          172

<210> 27
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> 98023 oligonucleotide

<400> 27
gtacccttaa gatgcta                                     17

<210> 28
<211> 17
<212> DNA
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